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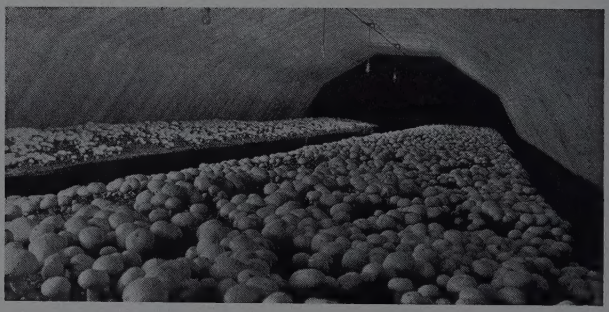

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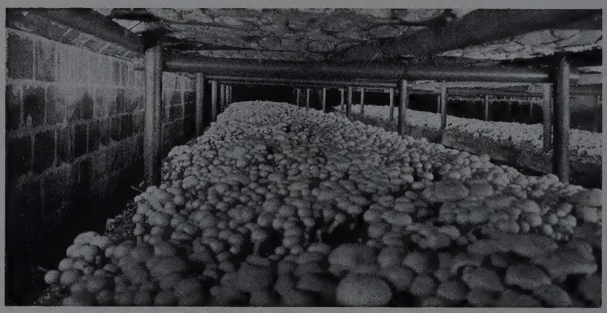

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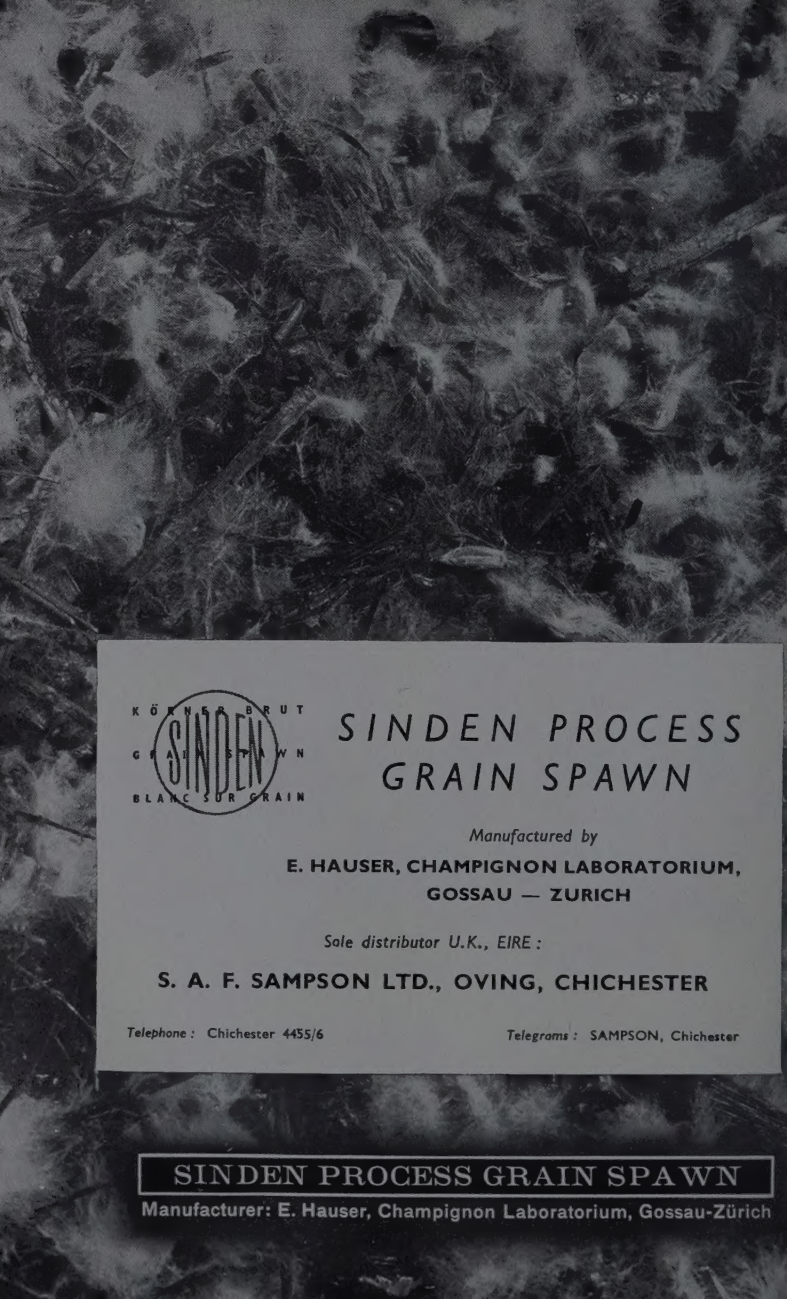
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MGA BULLETIN

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EDITORIAL

THOSE BIG FELLOWS

It is one of the peculiarities of human nature that, in the eyes of one's fellows, it is a crime to make progress, to get ahead and to become big.

An attitude such as this, common though it is, understandable though it is too, is surely so very, very wrong.

For many of us who have had the bitter experience of being in business in a small way, fired with ambition to do great things, yet either unable or unwilling to progress, and too frightened to " take a chance ", it is all so easy to let off steam and abuse the big fellows, all in an attempt to justify our own shortcomings and to still our own uneasy consciences. All too easy it is to attack those who, in a world of big business, have made progress and are still progressing.

Progress, with all its heartaches for some, must go on. Without it the world would stand still, would stagnate and would inevitably die. Progress can come in many ways as far as mushroom growers are concerned—by expansion in area—by expansion in production without an expanded bed area—and by an improvement in quality, to name a few. If increased quantity and improved quality can be induced to go hand in hand so much the better.

There is room in progress for the large and the small grower along the lines mentioned and there is no reason to suppose that anyone but the very smallest grower must necessarily disappear. And strange though it is the small good 'uns, with remarkable resilience, so often not only survive against the odds, but actually flourish. They commit no crime by refusing to die but neither do the big fellows who just cannot stand still. There's room I think, not only at the top but in between as well.

WRA

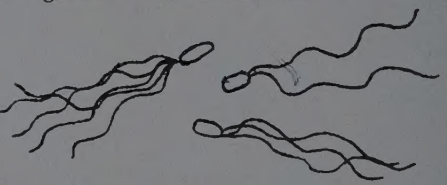
PART 1.....

BRIEF OUTLINE OF AND CONTROL FOR MUSHROOM PATHOGENS, WEED MOULDS, INDICATOR MOULDS AND COMPETITORS

Prepared by
Dr. L. R. Kneebone and **E. L. Merek**
of the Department of Botany and Plant Pathology of the Pennsylvania State University for the occasion of the first
Mushroom Industry Short Course
9th—12th July, 1956, and revised by Dr. Kneebone for the Third Mushroom Industry Short Course, 23rd—26th June, 1958.

Common Name of Disease—Bacterial blotch or Brown blotch.

Scientific Name of Causal Organism—*Pseudomonas tolaasi.*



Brief Description of Causal Organism—These bacteria are gram negative motile rods, .4—.5 × .9—1.7 μ producing a green fluorescent pigment in culture.

Symptoms Produced—Circular or irregular yellowish spots develop at or near the margin of the cap. These enlarge rapidly and coalesce to form rich chocolate brown blotches that are slightly depressed. In severe cases the whole cap and stem, even the gills, become blemished. The infection penetrates only 1—3 mm. in depth but underlying tissue may have a grey to yellow water-soaked appearance.

Brief Life History of Causal Organism—Since most bacterial cells can divide about every 20—30 minutes under favourable conditions, the amount of inoculum increases very rapidly and secondary infections are abundant. Infection usually begins at points of contact of one mushroom with another where water is likely to remain for some time after sprinkling. Bacterial cells invade and reproduce in the surface hyphae of the cap, hyphal cells rupture and the bacterial cells are exposed for further spread.

Most Frequent Source(s) of Infection—Soil, contaminated woodwork or implements.

How Spread—Splashing droplets of water, contaminated picking and trashing implements, nematodes, flies, mites.

Predisposing Factors to Infection—Continuous high humidity and poor ventilation which permit the caps of the mushrooms to remain wet for extended periods after watering.

Suggested Control Measures—Soil sterilization; continuous use of chlorinated water at rate of 100—150 ppm. after pins first form; early trashing of infected mushrooms so as not to allow a build-up of inoculum; increased ventilation and air movement and sometimes a

slight elevation of temperature, immediately after watering until caps of the mushrooms are no longer wet; Dr. Ark mentions watering with limewater until pH of soil is 7.6 and applying 2—2—50 Bordeaux on top of soil; research here indicates that antibiotics are not effective because of inactivation in the casing layer.

Common Name of Disease—Bacterial pit.

Scientific Name of Causal Organism—Causal organism not known.

Symptoms Produced—Small pits or holes develop in the surface of the cap. The pits are irregular in shape with rough margins and sides. Usually the pits contain glistening slime which upon inspection is found to consist of masses of bacteria, usually *Pseudomonas fluorescens*, a saprophyte which can not initiate the disease. The injury or pit is thought to be caused by mites or nematodes and the bacteria develop in the injury on the nutrients that exude from the damaged cells of the mushroom.

Most Frequent Source(s) of Infection—Mites and nematodes that feed on the cap.

How Spread—Apparently the bacteria can develop only on damaged tissue so the spread seems to be dependent on the feeding habits of certain mites and nematodes.

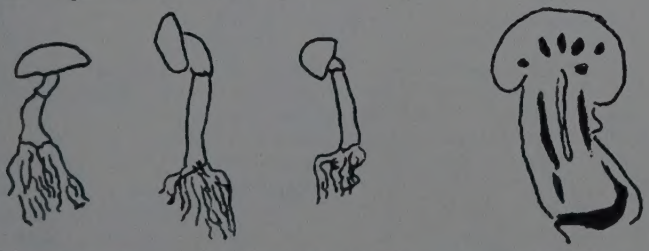
Predisposing Factors to Infection—Presence of mites and nematodes on the surface of the producing beds; slow evaporation which permit pits to remain moist.

Suggested Control Measures—Exercise usual controls for mites and nematodes. See " The Animal Pests of Mushrooms " (C. A. Thomas, 1958).

Common Name of Disease—Mummy.

Scientific Name of Causal Organism—Causal organism unknown.

Brief Description of Causal Organism—
Causal organism unknown.



Symptoms Produced—This devastating disease moves progressively down a bed at the rate of about one foot per day affecting all mushrooms in the infected area. There is no recovery in the production of healthy mushrooms although numerous pins and young mushrooms may continue to be produced. The individual diseased mushrooms are

dry and leathery and frequently have spindly stems with dwarfed and tilted caps. A white, felty overgrowth of tissue usually develops at the base of the stem but is separated from the stem by a barrier of dead tissue which may be hard. Internally the affected mushroom sometimes exhibits brown streaks throughout the interior of the stem terminating in dark pits or spots in the cap. When the cap is broken from the stem the darkened streaks appear as spots where the cap and stem were joined.

Brief Life History of Causal Organism—The source and cause of the disease is unknown. A diseased region appears spontaneously and infection spreads in all directions through compost and/or soil in which the spawn is established. There seems to be no correlation between the presence of the disease and animal pests, position in house, time after spawning or casing, season of year, type of growing site, or geographical location. The spawn in the diseased area appears normal.

Most Frequent Source(s) of Infection—Unknown.

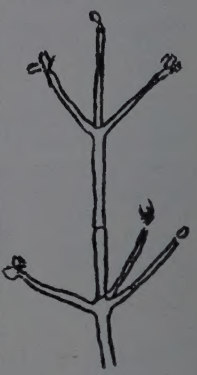
How Spread—Continuous from primary infection.

Predisposing Factors to Infection—None known.

Suggested Control Measures—Trenching about 8′ beyond the symptomatic margin of the disease. No practicable chemical control is known.

Common Name of Disease—Brown spot.

Scientific Name of Causal Organism—*Verticillium malthousei.*



Brief Description of Causal Organism—This mould is white in colour. It produces many hyaline or colourless 1-celled spores borne in terminal clusters on slender, branched and verticillate conidiophores. The brown colouration associated with the disease results from the dead mushroom tissue and is not a pigment of the mould.

Symptoms Produced—Symptoms are of several kinds. The commonest and mildest symptom is light brown superficial spotting of the cap. As these spots extend in diameter there is coalescing into brown blotches. These necrotic areas are not as dark nor as rich a brown as those produced in the bacterial blotch disease. As the spot ages it may become somewhat sunken and the centre of the lesion will appear lighter in colour because of a covering of " bloom " which is the result of heavy sporulation by the mould.

A second symptom results from infection of young stems of mushrooms which causes a splitting of the stem so that it presents a shattered appearance. Interference with the proper growth of the stem causes the cap to be small, tilted and misshapen.

The third symptom is produced by infection of the very young pinheads which fail to develop and become irregular swollen masses of dry leathery tissue.

Brief Life History of Causal Organism—A spore germinates on the surface of a wet mushroom of any age. The infection is confined to the surface but spreads laterally. The older mycelium of the mould produces tremendous numbers of spores in the centre of the lesion which are then readily disseminated and numerous subsequent infections take place. **Most Frequent Source(s) of Infection**—Air, infected mushroom trash and spent compost, soil.

How Spread—Air currents, flies, mites, water, trashing.
Predisposing Factors to Infection—Moist surfaces of mushrooms, temperatures about 60° F.

Suggested Control Measures—Zineb dust as often as three times a week at rate of $\frac{1}{4}$ lb. of 15% dust per 1,000 sq. ft. of bed. Chlorine in water at 150 ppm.; early and careful trashing; steam badly infested house before emptying; removal from the premises of spent compost and trash; increased ventilation after watering to dry caps of mushrooms; soil sterilization and protection from recontamination; cropping temperatures 55—60° F.

Common Name of Disease—Bubble.

Scientific Name of Causal Organism—*Mycogone perniciosa.*

Brief Description of Causal Organism—This mould is white with a slight tendency to tan with age. It produces two kinds of spores: one-celled hyaline conidia borne terminally on verticillate branches of the conidiophore, and large, round, warty chlamydospores attached to an inflated basal cell. Usually the mould intergrows with the hyphae of the mushroom.

Symptoms Produced—The infected mushroom may be covered with a dense white mass of mycelium of the mould or the mushroom may often be transformed by the parasitism into a distorted or spherical mass having a velvety white exterior from which exudes an amber fluid.

Brief Life History of Causal Organism—The mould spore may germinate on mushroom tissue or in the soil through which the mycelium of the mould grows until it contacts and parasitizes the mushroom. Spores are produced in abundance on the surface of the infected mushroom. Spores may remain viable for long periods in soil.

Most Frequent Source(s) of Infection—Soil, infected trash and spent compost, air, pickers.

How Spread—Spores produced on infected mushrooms may be airborne, water-borne or mechanically-borne by pickers, flies or mites.
Predisposing Factors to Infection—Temperature above 60° F.

Suggested Control Measures—Thorough soil sterilization; zineb dust as often as three times a week at rate of $\frac{1}{4}$ lb. of 15% dust per 1,000

sq. ft. of bed; chlorine in water at 150 ppm.; early and careful trashing; steam badly infected house at 140° F. for 1—3 hours before emptying; removal from premises of spent compost and trash; cropping temperatures 55—60° F.

Common Name of Disease—Soft mildew.

Scientific Name of Causal Organism—*Dactylium dendroides.*

Brief Description of Causal Organism—The mycelium of this mould is greyish to white when young but reddish in age. It grows in a wefty or cottony fashion. Spores are slightly yellowish, ovoid, two or more-celled and are borne in loose heads at the surface of the mould growth on slender, verticillately branched condiophores.

Symptoms Produced—The mould grows rapidly over the surface of the soil enveloping all mushrooms in its path. The mushrooms so infected appear like cottony balls on the surface but underneath the mushroom is being reduced to a soft rotting mass.

Brief Life History of Causal Organism—The spore germinates on the surface of a mushroom. The mould mycelium grows superficially but rapidly over the mushroom, the soil and over neighbouring mushrooms. Abundant spores are soon produced on the surface of the cobwebby growth from where they are readily airborne to adjacent producing areas.

Most Frequent Source(s) of Infection—Soil, air.

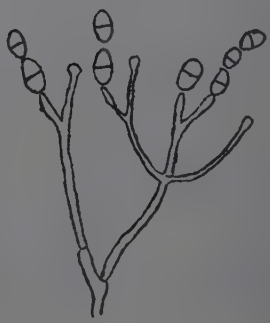
How Spread—Mostly airborne, water-borne, careless trashing.

Predisposing Factors to Infection—Wet surfaces and high humidity.

Suggested Control Measures—Zineb dust as often as three times a week at rate of $\frac{1}{4}$ lb. of 15% dust per 1,000 sq. ft.; early detection and immediate local hand-application of 15% calcium hypochlorite powder so as to completely cover the small infected areas and for a distance of 2 inches beyond the visible periphery of the infected area; minimize the favourable conditions of wet surfaces and high humidity.

Common Name of Disease—Mildew.

Scientific Name of Causal Organism—*Didymocladium ternatum.*



Brief Description of Causal Organism—The mycelium of this mould is always pure white and not so fluffy or luxuriant as *Dactylium*. The spores are hyaline, 2-celled, ellipsoidal and borne in chains on branching conidiophores. The little ball-like masses of spores cover infected mushrooms and surrounding soil.

Symptoms Produced—The first mycelium from germinated spores is more sparse than *Dactylium* and does not grow so

rapidly. The white mould grows superficially on the soil and engulfs mushrooms in its path, covering both soil and mushrooms with little, white ball-like masses of spores. The infected mushrooms decay but with less brownish discolouration than in the case of *Dactylium*.

Brief Life History of Causal Organism—The spore may germinate on a mushroom, on old mushroom tissue or on surface mushroom mycelium. A weft-like growth soon produces ball-like masses of spores both on mushroom tissue and adjacent soil. These spores are then readily airborne to permit a rapid build-up of the disease if environmental factors are favourable to *Didymocladium*.

Most Frequent Source(s) of Infection—Air, soil.

How Spread—Mostly airborne, water-borne, careless trashing.

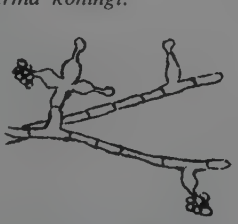
Predisposing Factors to Infection—Wet surfaces and high humidity.

Suggested Control Measures—Zineb dust as often as three times a week at rate of $\frac{1}{4}$ lb. of 15% dust per 1,000 sq. ft.; early detection and immediate local hand-application of 15% calcium hypochlorite powder so as to completely cover the small infected areas and for a distance of 2 inches beyond the visible periphery of the infected area; minimize the favourable conditions of wet surfaces and high humidity.

Common Name of Disease—Green mildew.

Scientific Name of Causal Organism—*Trichoderma koningi*.

Brief Description of Causal Organism—The mycelium is generally greyish and not so profuse or cottony as Dactylium. Ovoid, 1-celled, grey-green spores are borne in loose heads on the tips of much branched hyaline conidiophores. The greenish spore masses are borne on the surface of mushrooms and are sometimes only faintly visible through an overlying greyish cobwebby mycelium.



Symptoms Produced—The greyish mycelium underlaid by the sage-green spore heads grows rather rapidly over mushrooms, old mushroom tissue and the soil. The infected mushroom turns brown where first infected and eventually the entire cap exhibits a brown discolouration.
Brief Life History of Causal Organism—The spore usually germinates on old mushroom tissue from which the wefty mycelium grows over the soil and engulfs adjacent mushrooms. The clusters of spore heads are developed beneath the web of mycelium from where they may be disseminated to other sites of infection.

Most Frequent Source(s) of Infection—Air, soil.

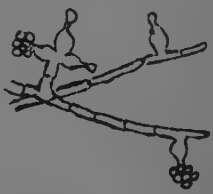
How Spread—Airborne, water-borne, careless trashing.

Predisposing Factors to Infection—Wet surfaces, high humidity, presence of dead mushroom tissue.

Suggested Control Measures—Zineb dust as often as three times a week at rate of $\frac{1}{4}$ lb. of 15% dust per 1,000 sq. ft.; early detection and immediate local hand-application of 15% calcium hypochlorite powder so as to completely cover the small infected areas and for a distance of 2 inches beyond the visible periphery of the infected area; minimize the favourable conditions of wet surfaces and high humidity.

Common Name of Disease—Red spot.

Scientific Name of Causal Organism—*Trichoderma* sp.



Brief Description of Causal Organism—The mycelium is generally greyish and mildew-like but not so profuse or cottony as *Dactylium*. Spores are light green, 1-celled, ovoid, borne in small terminal clusters or loose heads on the tips of much branched hyaline conidiophores.

Symptoms Produced—In early breaks but most frequently in first break, small reddish-brown spots develop on the cap around the point of infectivity by the germinating spore. The spots usually remain localized and do not coalesce to form blotches. Apparently there is no mildew growth on the mushrooms and little on the soil. In the latter instance the mould usually is not visible until the later part of the crop.

Brief Life History of Causal Organism—Not much is known about this pathogen. It has been reported only from caves thus far. Apparently the spores are in the soil and germinate to infect mushrooms in the early breaks. Secondary infections from new spores produced in the lesions of infected mushrooms appear to be infrequent.

Most Frequent Source(s) of Infection—Soil.

How Spread—Little secondary infection and primary lesions are localized.

Predisposing Factors to Infection—Wet surfaces and high humidity.

Suggested Control Measures—Thorough soil sterilization; minimize wet surfaces and excessive humidity.

(TO BE CONTINUED)

NEW FRENCH PRESIDENT

Monsieur R. Chaumette has accepted the Presidency of the French Federation of Mushroom Growers following the resignation of Monsieur Bernard Zinetti.

M. Chaumette is pictured herewith.

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ANNUAL LUNCH

About 130 people attended the Annual Lunch, followed by the Annual General Meeting of the Mushroom Growers' Association, held at the Connaught Rooms, London, on Tuesday, 24th March.

Guest of Honour was Sir William Slater, K.B.E., D.Sc., F.R.I.C., F.R.S., Secretary of the Agricultural Research Council. Other guests included Mr. F. W. Toovey, O.B.E., Director of Research at the Glasshouse Crops Research Institute, Littlehampton: Mr. E. H. Gardener, C.B.E., Chairman of the National Farmers' Union Central Horticultural Committee and Mr. Henry Haynes, Senior NFU Secretary.

The Chairman's Reception which preceded the lunch was again most popular and the accommodation provided was somewhat inadequate.

Mr. F. Bleazard, Chairman of the Association, presided at lunch, which consisted of turtle soup followed by steak, kidney and mushroom pie (some members spent a lot of time in an unsuccessful attempt to locate the mushrooms) and by Charlotte Russe, fruit and cream.

In his remarks at lunch Mr. Bleazard referred to the " wonderful attendance ". He went on to welcome the guests and had a special word of thanks for the Press. Later he spoke of the visit of Mrs. Bleazard and himself to the American Short Course as " the highlight of my year of office ", said the visit of Mr. Fred. C. Atkins to America was " one of the most important things accomplished during the year " and added that Mr. Atkins had been able to contact Dr. Lambert and

IN COME THE STEAK, KIDNEY AND MUSHROOM PUDDINGS

Dr. Kneebone personally and help greatly with the visit of Dr. Kneebone to Bournemouth later in the year.

Mr. Bleazard had a word of praise for the research work which was going on at the Glasshouse Crops Research Institute " under Mr. Toovey's drive ".

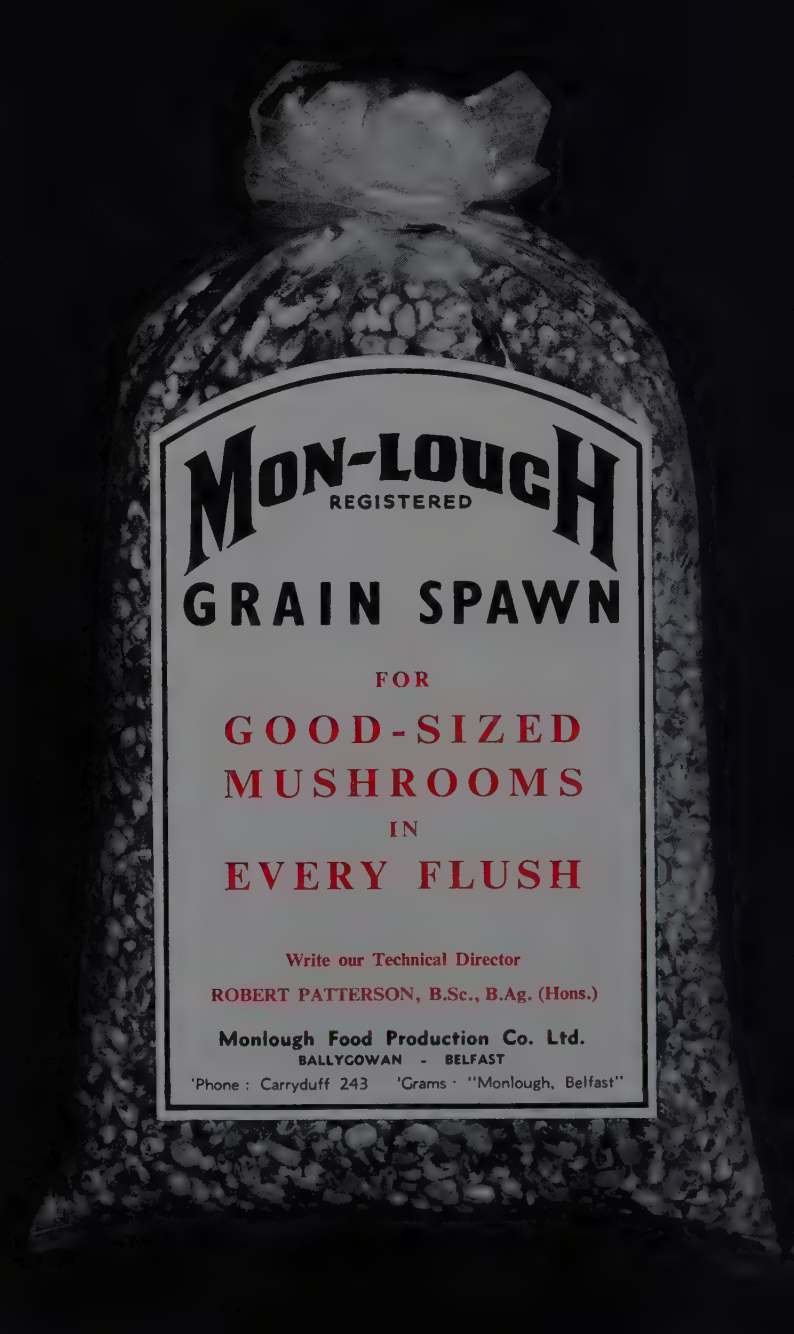
The Chairman thought that prices during the year under review had been " reasonably good " and went on to say " There is a situation looming up which is a challenge that we shall all have to meet—increased production. There has been no significant change in the membership position but most growers are increasing production, either by better growing methods or expansion. From facts and figures compiled by the MGA this increase in 1958 amounted to nearly 30% over the 1957 figures ". " To expect publicity on our limited scale to remove this increase from the market and maintain prices is expecting rather too much. If the increase had been, say, only 10% it is probable that the 1957 prices would have been maintained in 1958. Any sudden increase in fresh mushrooms on the market makes itself felt where it hurts most ".

In a reference to threatened imports of Dutch mushrooms Mr. Bleazard had this to say:—" With regard to Imports and Tariffs, your Committee is fully alive to the position and will take every possible action at Government level through the NFU or by any other means. The facts of the Dutch case were brought to the attention of the Ministry of Agriculture early in February. How the Dutch can overcome a tariff of 20% plus a carriage charge of say 3d. per lb. and offer to undercut us to the extent of 3d. per lb., making a total of 1/2d. in all, is a mystery which, one day, we may solve ".

Before concluding the Chairman made reference to the need for " putting our own house in order " and getting cost of production down to a minimum—the conviction that Publicity must continue to play an important part in MGA policy—thanks to the ladies of the Recipe Testing panel—and other matters, concluding with thanks to all those who had contributed to the Belgian Disaster Fund.

Sir William Slater recalled that it was eight years since he had previously attended the annual lunch of the MGA. Then there was not much he could do to assist mushroom growers but things were different now. He recalled the excellent work which was done at the Research Station at Yaxley saying, " You see, this was something rather different. I spend most of my time trying to sell research but here were you trying to sell research to me—using your own money to start and

L. to R.: Mrs. Bleazard, Sir William Slater, K.B.E., D.Sc., F.R.I.C., F.R.S., Mr. Frank Bleazard and Mr. F. W. Toovey, O.B.E.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ROBERT PATTERSON, B.Sc., B.Ag. (Hons.)
Monlough Food Production Co. Ltd.
BALLYGOWAN - BELFAST
'Phone : Carryduff 243 'Grams : "Monlough, Belfast"

carry out research. I was so impressed that I there and then decided to do all I could to help mushroom growers carry on, all this long before it was decided that all should be moved to the Glasshouse Research Institute ".

Sir William apologised for the slowness of the construction of buildings, etc., at the Institute and added " The Director of the Station was always making a nuisance of himself pleading for these mushroom growers ". They were fortunate now in having a large and competent staff at Littlehampton who were able to deal thoroughly with mushroom problems and " bit by bit we hope to solve this jig-saw puzzle and put it together and, as the picture becomes obvious, we shall make it available to you ". He added that the various disorders, pests and the whole structure of mushroom growing could not be examined in isolation—the problems had to be approached as a whole, genetics, cultural conditions, infection, pests and so on.

Sir William concluded with a congratulatory reference to the MGA Research Liaison Committee and paid tribute to the work of the NAAS.

ANNUAL MEETING

As MGA Chairman, Mr. F. Bleazard presided at the Annual Meeting and the Minutes of the last meeting were signed on the proposition of Mr. F. C. Atkins seconded by Mr. E. A. Gook.

CHAIRMAN'S REPORT

Mr. Bleazard said :

Most of the things that I am about to say have appeared in the Bulletin but in order to refresh your memories I must risk some repetition. **The Bulletin** continues to be the main artery of our Association. It is the main link and source of information between members and the Committee and without it I feel the Association might collapse. We are greatly indebted to Mr. Alderton, who does such an excellent job as Editor.

Area Meetings and Farm Walks: I am sorry that it has only been possible to hold 3 Area Meetings and Farm Walks this year. The trouble that some growers had in 1957 with La France has made them reluctant to throw their farms open. 1958 seems to have been a better cropping year and so Meetings and Farm Walks will be resumed as possible. The three meetings held were in Kent, Lancashire and Somerset and the one at Bristol was particularly interesting as it was at the large nursery of Mr. Griffiths. The new mushroom washing methods were demonstrated and gave us all much food for thought.

Postal Voting: Postal Voting has not been quite the success we had hoped, as the Areas have been very slow in nominating representatives. Last year we only obtained one nomination from each of the three areas and so the nominees were elected without the necessity to vote. This year we have three areas without a nomination at all. The Committee have power to co-opt members to fill vacancies if they so desire but it would be better if the nominations came from the Areas concerned. The scheme, if properly worked, does ensure that all Areas

of the country are represented. This matter is on the Agenda for further discussion.

Publicity

This has occupied much of the time of your Executive.

Mr. Berry, the Publicity Chairman, and the Publicity Committee have put in a tremendous amount of time on Publicity. To this Committee we owe many thanks. I would also like to thank Mr. Reed and Mr. Rudkin for their work on our behalf.

We have recently appointed our own Public Relations Officer—Miss Ann Pasco. I am sure that when she has got to know us all better she will be glad she left Journalism to settle in the crazy land of pixie town dwellers.

Co-operative and Processing: At the last adjourned Annual General Meeting the Committee were instructed to investigate the possibilities of forming a Co-operative for Processing. Dr. Edwards has investigated the possibilities but so far no one has been able to produce a workable scheme.

The Committee are investigating the possibility of Co-operative buying and there does seem to be some possibilities with fuel oil in particular and in some other directions. The Secretary is negotiating with British Railways on a collective basis for reduced carriage rates, but the going here is rather uphill.

Research—Dr. Kneebone

I referred to Research at the Luncheon but I cannot miss this opportunity to again say a few words. I consider that it was a major achievement by your Committee in arranging the trip of Mr. Atkins to America, where he gave a paper at Pennsylvania State University Mushroom Short Course. It was due to this gesture that the American Mushroom Industry reciprocated and sponsored the trip of Dr. Kneebone, Director of Mushroom Research at Pennsylvania State University, to our Conference at Bournemouth. We have already reaped benefit from this interchange and I am confident we shall reap even more benefit in the future.

1958 Exhibition

The Conference at Bournemouth was one of the most successful efforts ever held. The Trade Show and Competitions were well supported and the lecture room for Dr. Kneebone's address was packed to the door.

1959 Exhibition

This will be held at Folkestone on Tuesday and Wednesday, 6th and 7th October. Details will be available later.

1960 Conference:

A Conference with a series of speakers similar to the one held at Southport in 1957, will be held at Weston-Super-Mare, in October, 1960. If the success of Southport was anything to go by we are in for an interesting and instructive time.

International Congress

The International Congress on Mushroom Science will be held in Copenhagen in July. This is a Conference which is held every three years in different countries each time. Mr. Atkins is the Chairman of the Organising Committee and further particulars can be had from the MGA Secretary. Dr. Lambert and Dr. Kneebone from America hope to attend.

I will now conclude my report by thanking the Committee for their support throughout the year.

We thank Mr. Filmer in particular for carrying out his duties as Treasurer and keeping us out of the hands of the bailiffs. Last and by no means least, our Secretary and his assistant Miss Zazzi who work with considerable industry in the interests of the Association.

The report was adopted, on the proposition of Mr. R. Thompson, seconded by Mr. G. V. Allen.

DISCUSSION

In the subsequent discussion the Chairman raised the matter of Area Representation and Postal Voting and Mr. Baker observed that it was now up to the Executive Committee to fill the three vacant Area Seats by co-opting members from the areas concerned. It was felt that in spite of what appeard to be a lack of interest in this method of electing the Committee the procedure should be given at least one more year on trial.

Dr. R. L. Edwards gave a short report on the facts and figures obtained as a result of the Processing Questionnaire (a report on this matter by Dr. Edwards will appear in a later edition of *The Bulletin*). The Chairman said that the Executive Committee had considered the report but had not arrived at a satisfactory plan of action.

Mr. R. Dumbreck (Scotland) said that when he was in America last year he visited the Mushroom Growers' Co-operative in Vancouver which had about 120 Grower Members. This Co-operative graded and marketed the mushrooms at a fixed price of 43 cents. per lb. There was no fresh market at all for seconds and stalks and these were processed. In a reply to a question by Mr. E. Palfrey (Harpenden), Dr. Edwards said he was quite sure that the answers he had received to the questionnaire had been given in good faith.

SECRETARY'S REPORT

Membership: Total membership of the Association for the year under review stood at 636, every one fully paid up. I again make the point that we number our members from only those whose subscription was in fact paid in the year with which we are concerned. Taking into consideration the subscriptions which have not been paid by registered members, your membership last year was around the 700 mark.

Grower membership of the Association stands at 415, an increase over last year of 16, but Associate members showed a drop of 19, making a difference of three (636 in 1958 and 639 in 1957).

The number of Grower Members in the United Kingdom stands at 250—exactly the same as the previous year.

Bulletin: It is my pleasant duty to again thank all those who assisted in any way with the production of the Bulletin and to thank Mr. Fred Atkins and Dr. Edwards for their services on the Editorial Board—services which are quite invaluable and very greatly appreciated by me. The printers of the Bulletin, Messrs. W. S. Maney & Son of Leeds, have again given me the utmost in the matter of co-operation. Your advertisers are the financial backbone of the publication so I urge you that whenever you are faced with the choice of buying anything from two suppliers, one of whom advertises in the Bulletin, buy it from the firm with the advertisement.

Executive Committee: Your Executive Committee has met six times in all and attendances are as follows:—Mr. F. Bleazard—Chairman (6), Messrs. F. C. Atkins, G. V. Reed, A. J. Berry, P. B. Stanley-Evans, Raymond Thompson, G. C. Griffiths, E. A. Gook, and G. V. Allen (all 6), Mr. F. L. Filmer—Honorary Treasurer (5), Messrs. J. A. Linfield, R. H. Pinkerton, A. A. Spencer, and J. Stewart-Wood (4), N. R. Cooper (3). Mr. Campbell Melville, the member for Scotland, resigned and, unfortunately, does not now grow mushrooms.

Publicity Committee: This Committee met ten times officially and there were several unofficial meetings amongst various members. Attendances were :—Mr. A. J. Berry Chairman and Mr. G. W. Baker, (10), Mr. F. L. Filmer, (8) and Mr. T. J. Rudkin (9). In addition, your MGA Chairman, Mr. Bleazard, was present at eight meetings and Mr. Raymond Thompson (6), with Mr. Stanley-Evans (5) and Mr. Graham Griffiths (4), who were co-opted on to this Committee in September.

Committee Elections: There were only two nominations for the two General Seats on the Executive Committee, Mr. G. W. Baker and Mr. J. A. Linfield, who are thus elected unopposed. There were no nominations for the three Area Seats, Yorkshire, Lancashire and Northern Ireland with Scotland.

The report was adopted on the proposition of Mr. R. Thompson seconded by Mr. E. Palfrey.

ACCOUNTS

Mr. F. L. Filmer, Hon. Treasurer of the MGA, presented the Accounts, part of which appear on page 178 of this *Bulletin*.

On the General Account, there was an excess of Income over Expenditure of £32 11s. 6d. The full impact of the increased subscription rates were apparent in the increased receipts for these items. It was unfortunate, but quite unavoidable in these times, that expenditure had generally increased. On the Publicity Account there had been an excess of Expenditure over Income of £222 but this was not significant in any way.

The Accounts were adopted on the proposition of Mr. A. D. Jones seconded by Dr. R. L. Edwards.

PUBLICITY REPORT

Mr. A. J. Berry, Chairman of the Publicity Committee, said:— " I would like in the first place to thank the MGA Grower members for their loyal support to the Publicity Fund. In the last financial year nearly £4,000 was raised by this means as against £3,630 the previous year, which it must be remembered was at the original rate of 2d. per carton. From reliable information we have now been given by the Spawn Merchants, it seems that the percentage of actual Grower Members of the MGA who support this Scheme is over 90% at the 6d. per carton rate.

Spawn Merchants: Our thanks are due to the Spawn Merchants for their efforts in collecting the contributions, and we look forward to even closer co-operation.

YOU CAN RELY ON
MOUNT SPAWN

THE RESULT *of*
30 YEARS RESEARCH
and
COMMERCIAL USE

EVERY MONTH MORE AND MORE GROWERS TURN TO MOUNT MUSHROOM SPAWN

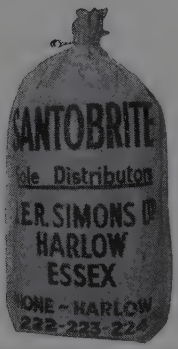
SOLE DISTRIBUTORS

J. E. R. SIMONS LTD

NOTE OUR NEW PHONE NUMBE

SANTOBRITE

Ensures a CLEAN START and PRESERVES your TRAYS AND WOODWORK



CASING SOIL

A new small hand concrete mixer £17 10 0. Other models available, petrol or electric driven £79 10 0. This small mixer is of course suitable for concrete and other mixing.

The Best Growers use

SANTOBRITE

as a Routine Treatment in 10 lb. Bags and 80 lb. cases. Ask for leaflet.

A neat little Brass Thermometer for Tray or Shelves 17/6 each

- HARLOW - ESSEX

. . HARLOW 222, 223, 224

Committee Members: Your Publicity Committee has met officially on 10 occasions during the year and in addition there have been several unofficial meetings. As plans progressed it was felt that a larger Committee would be advantagous, and for the latter half of the year, Messrs. Stanley-Evans and Graham Griffiths joined the original Committee of Messrs. Bleazard, Baker, Filmer, Rudkin and Thompson, and I am indeed grateful to these members, both for their loyal support to me as Chairman and for their excellent attendances at Committee meetings.

Contributions Raised: At the last Annual Meeting it was decided to raise the rate of contributions from 2d. per carton to 10%, but subsequently it was pointed out that 10% raised some difficulties and eventually it was agreed to adopt a 6d. per carton levy. This increased rate operated as from 1st November last and the increased contributions are now being received.

Public Relations Officer: During the year we decided, with the support of the Executive Committee, to make a change with regard to our Public Relations work and instead of having a firm of Public Relations Consultants, we decided to appoint our own P.R.O. Accordingly, in December, Miss Ann Pasco commenced working with us, having left journalism. In consultation with the Information Division of the NFU, headed by Mr. J. Hargreaves, it was agreed that Miss Pasco should work on mushroom publicity through the channels already established by the NFU, in addition to any other channels she herself might establish. By working with the NFU we are able to avail ourselves of an organisation which is already working and by so doing we can achieve wide distribution of mushroom publicity at the minimum expenditure. One of the first things Miss Pasco did was to organise an MGA stand at a cookery demonstration in Luton, arranged by the NFU and attended by some 2,000 housewives.

Public Relations: Throughout the year the distribution of recipe leaflets has steadily continued and in January a new leaflet was issued for use in conjunction with an advertisement appearing in " Home Economics ", a publication which circulates amongst teachers of domestic science and, we hope, amongst Women's Institutes and similar organisations, especially those connected with the teaching of cookery. The response has been encouraging and we are particularly pleased with the number of requests for leaflets for these educational purposes as we feel that such groups cover an extremely large field in a very practical manner.

Early this year too the " Month by Month " recipe leaflets were re-designed to meet a persistent demand from some of the large stores. We decided to have 100,000 printed at a cost of £100 and the first request from a chain store was for 50,000. This illustrates the probable cost of a campaign of any size which envisaged *ad lib* distribution of leaflets via stores. Stores appear willing to make a small payment for recipes but that is all and, for that matter, all we have a right to expect.

Newspaper and magazine cuttings indicate that mushrooms receive mentions in something like 150 publications each month and we are hoping to increase this.

On three occasions during the past year we have co-operated in " Mushroom Weeks " with Lewis's stores at Glasgow, Manchester, Liverpool, Leeds, Leicester, Hanley, Birmingham and Bristol, and I am grateful to all those members who so willingly co-operated, some, including Mr. Bleazard, making long journeys in order to service the stores with trays of growing mushrooms.

At Bristol and Bradford we have supplied mushrooms for " Ideal Home " Exhibition cooking demonstrations.

As many of you know, Selfridges are celebrating their Jubilee and have a special window showing growing mushrooms which appears to be attracting considerable attention. Last Christmas we distributed to various Women Journalists some rather attractive aprons, a sample of which is on view with the publicity cuttings, and this rather different approach appears to be having the desired result. It is really astonishing how, like the Valentine Cards sent last year, these little friendly reminders do bring our product to the notice of our journalistic friends.

Picture Library: Many requests are received from cookery writers for the supply of photographs, and in order to meet these we have decided to establish a Picture Library, starting off with ten original pictures of dishes specially prepared for the purpose. The Broadham Produce Company have on many occasions during the year supplied specially selected mushrooms to a number of magazines for photographic purposes and we are very grateful to them for this most reliable service.

Recipe Library: As our contact with journalism generally increased there developed a need for a Recipe Library also. For this purpose, Miss V. Baker, who has also been engaged on some nutritional value research work, is completing a selection of 100 main recipes which will be card-indexed and which will be available for recommendations in connection with any meals. She commenced this work before Miss Pasco's appointment.

Television Advertising: Your Executive Committee found it necessary to prune somewhat the financial programme outlined by the Publicity Committee but in full consultation with the Committee, the Executive decided on a bold experiment—Television advertising from the Birmingham ATV Station, calculated to reach a million homes with a potential adult audience of three million people. For an organisation of this size, the expenditure involved—about £4,000— is certainly considerable but with 55 mushroom spots between 10th May and 14th August, each occupying seven seconds, we hope to show a measurable increase in mushroom sales in the Midlands. Birmingham was selected as this is a market used by growers all over the country. Three films—Eggs, Bacon and Mushrooms, Mushrooms on Toast, and Steak and Mushrooms—will be used and interchanged throughout the entire series. There will be seven seconds of visual and five of speaking for each "spot ", with the emphasis on " m-m-m-Mushrooms ".

It will be readily appreciated that any future policy for publicity will be greatly influenced by the success or otherwise of this Television effort and a reliable assessment of mushroom sales, before and after

the series, has been arranged to take place in the areas covered by the transmissions. We have deliberately refrained from following the normal practice of backing the television advertising with a newspaper campaign as we want to know the true benefit of the television medium when used in this limited manner.

FUTURE POLICY

The discussion on Future Policy was mainly concerned with Publicity. Earlier Mr. Atkins had asked why in view of the fact that the Television programmes had been arranged for the Summer glut period, mushrooms as a salad vegetable were not being advertised.

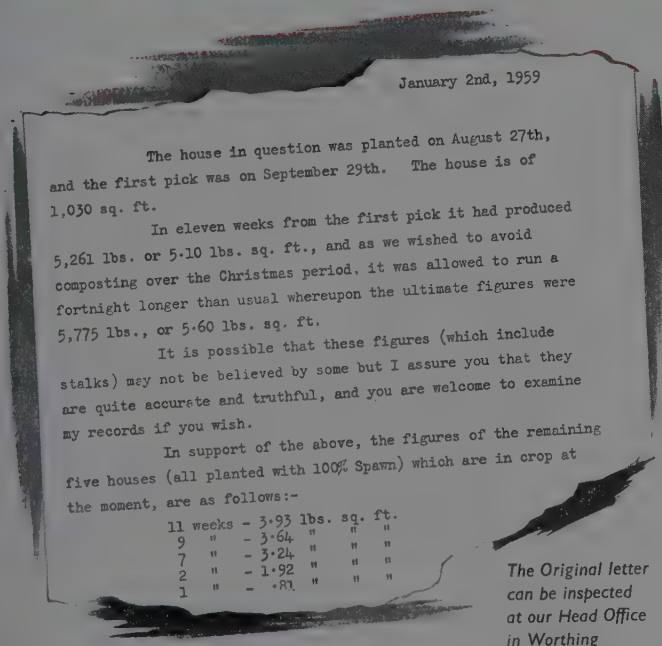
Mr. Berry said this point had been raised with the advertising experts who were of the opinion that, with the limited money available, it was not possible to evolve a satisfactory scheme to endeavour to change the eating habits of the public, for that is what salad inclusion would mean. The advice of the experts—to publicise mushrooms in their normal eating form—had been accepted. It was too much to expect £4,000 to change public opinion. Mr. Atkins said that whilst he was still of the opinion that salads should be included he was willing to withdraw in view of the opinions expressed. Mr. Graham Griffiths said he felt it was better to stick to expert advice in this matter. Mr. S. Cwynar (Nottingham) raised a laugh when he suggested that many mushrooms coming into Midland markets were not fit to be eaten in salads anyway and Mr. A. G. Pointing (Bradford-on-Avon) questioned whether many people like mushrooms in salads. " How much would it cost to educate the public to eat mushrooms in salads?" asked Mr. C. G. Stocking (South Luffenham).

It was after Mr. J. R. Oldfield (Doddington Place) had firmly pointed out that the Executive Committee had taken the advice of paid-for experts and had suggested that further discussion was a " waste of time " that the matter was finally left.

Mr. Berry said he was disappointed with the sale of publicity paper bags—7½ million in 1958 against 10 million in 1957. The Publicity Committee was not at all happy about the fact that the majority of these bags appeared to go through the same channels to the consumer. A wider coverage was important and, to this end, a special distribution of bags would take place to Grower Members early in May, designed to reach retailers and attract that wider coverage.

Mr. Clifford King (Woking) said his company were whole-heartedly in favour of Publicity and now that an assurance had been given that 80% of Grower Members were contributing his company would be prepared to join in at the 6d. rate. His Company was in favour of a compulsory levy so that all growers, members or non-members, paid their share towards any benefit, always provided that the methods used were well within the law. On the question of television advertising " we have grave doubts about the wisdom of committing such a large proportion of our income on a pilot scheme, which we can see no hope of following up with a national coverage in the forseeable future. We

MORE MUSHROOMS PER SQUARE FOOT!



January 2nd, 1959

The house in question was planted on August 27th, and the first pick was on September 29th. The house is of 1,030 sq. ft.

In eleven weeks from the first pick it had produced 5,261 lbs. or 5·10 lbs. sq. ft., and as we wished to avoid composting over the Christmas period, it was allowed to run a fortnight longer than usual whereupon the ultimate figures were 5,775 lbs., or 5·60 lbs. sq. ft.

It is possible that these figures (which include stalks) may not be believed by some but I assure you that they are quite accurate and truthful, and you are welcome to examine my records if you wish.

In support of the above, the figures of the remaining five houses (all planted with 100% Spawn) which are in crop at the moment, are as follows:-

11	weeks	- 3·93	lbs.	sq. ft.
9	"	- 3·64	"	" "
7	"	- 3·24	"	" "
2	"	- 1·92	"	" "
1	"	- ·81	"	" "

The Original letter can be inspected at our Head Office in Worthing

FOR SPEED QUALITY AND LASTING POWER

DARLINGTON'S

100%

PRODUCTIVE

MUSHROOM SPAWN

MANURE & GRAIN

W. DARLINGTON & SONS LTD

ESTABLISHED 1850

WORTHING · · · SUSSEX

understand that the Committee approached such people as the Egg Marketing Board and Bacon Information Council with a suggestion that they should help towards the cost of making our films. We submit that an offer from us to pay a lump sum to them to include mushrooms in their films would have been more likely to obtain a National coverage ".

Mr. King went on to say that his Company were strongly in favour of point-of-sale advertising and expressed the hope too that no effort would be spared to persuade the retailer to accept a lower profit ratio. His Company, last summer, had sold small second-grade mushrooms to a small retailer at 2/- per lb. and the retailer had charged the public 2/6d. per lb. " Within days he was selling up to 1,000 lb. per week . . . and at the same time it is very interesting to note that his sales of 1st quality mushrooms, sold at a maximum of 5/- per lb., have at least trebled ".

Mr. King concluded by asking for greater efforts at point-of-sale, more editorial publicity in the Trade and general Press, possible leaflets to put into baskets and " could we please have a new design of paper bag?".

Mr. G. V. Allen said Mr. King, in his comments, had raised the matter of a 6d. and a 3d. per carton rate of contributions and suggested that 90% of the growers at 6d. would produce more than everyone at 3d. but one large grower alone would be increasing his contributions by £1,000 a year at 3d. provided everyone contributed at this rate, but he was unwilling to make it 6d. He (Mr. Allen) would like to see the word " compulsory " and " levy " left out of the discussions altogether. After further discussion in which Mr. Raymond Thompson suggested that the matter be left with the Executive Committee, this was carried, on the proposition of Mr. A. D. Jones (Oxted), seconded by Mr. Pointing.

WHITE QUEEN LTD.

Dr. Edwards raised the matter of White Queen Ltd., Yaxley, with particular reference to the position of Mr. Raymond Thompson, who, as Vice-Chairman of the MGA Executive would almost automatically be elected Chairman for the coming year. Mr. Thompson was a Director of White Queen and, because of this, had offered to resign as Vice-Chairman and had suggested declining the Chairmanship, on the grounds that in previous years Spawn Makers and Salesmen had not been encouraged to serve on the Executive. Dr. Edwards went on to point out that somewhere about half of the members of the Executive Committee were, in fact, Directors of White Queen. He felt it was unfair to leave a decision on the matter to the Executive in view of the position of the White Queen Directors and in view of their services to the industry over the years. In fairness to the other Spawn Makers however, he suggested that whatever decisions might be reached within the Executive on the matter of spawn, such information should be conveyed immediately to all Spawn Makers. He then proposed " That this meeting does not wish Mr. Thompson or any other member of White Queen to be debarred from office because of that connection ". Mr. J. A. Linfield seconded and the resolution was carried *nem. con.*

WORLD'S PRESS DIGEST

Mushrooms were over-supplied. *Nurseryman Seedsman*, March 5/59. Mushrooms have taken a turn for the worse following the warm weather; the best are selling but the rest are sticking. *Grower*, March 7/59. A fair quantity available, and last week's prices maintained. *Fruit Trades' Journal*, March 14/59. No change for mushrooms, with buyers far fewer than supplies. *Nurseryman Seedsman*, March 19/59. Mushrooms, after a poor start at the beginning of the week, were much in demand by Wednesday. *Grower*, March 21/59. Although mushrooms still arrived in abundance, cheerful salesmen were busy coping with larger requests. *Nurseryman Seedsman*, March 26/59. Trade somewhat easier; prices for opens particularly have tended to fall. *Fruit Trades' Journal*, March 28/59.

In plants adequately provided with nutrients the number of calcium oxalate crystals decreased, while their size increased. S, N and Mg deficiences altered the shape of the crystals and reduced their size.

Takami: Calcium oxalate crystals in *Dioscorea Japonica*. In Japanese, with English summary, in *Botanical Magazine*, 69 (815), 1956.

Phenyl-alanine, methionine and proline promoted the mycelial growth of three strains of *Agaricus bisporus* in a liquid medium, the first two being the most active on two of the strains, while phenyl-alanine and proline were most active with the third. Thiamine was necessary for an appreciable growth response with these acids. Optimum levels for glucose, asparagine, and inorganic salts were determined in relation to the growth response to the amino acid-vitamin mixture.

I. M. Fraser and B. S. Fukikawa in *Mycologia*, 50, 4, 1958.

The use of B-complex vitamins in water solutions, or of supplementary organic materials high in B-complex vitamins, was shown to extend the heavy cropping season of mushrooms from 8-10 weeks to 12-14 weeks and to increase yields by about 30—50%. The effect of the vitamins on mushroom yield is probably due to the exhaustion of these constituents in the compost after the first flushes.

I. C. Hoppman and C. H. Hunt in *Research Bulletin* 815 Ohio Agricultural Experiment Station, 1958.

Designed to use hot water or steam as the heating medium, a new forced *warm air circulator* for wall mounting has been introduced by Fenton, Byrn & Co. Ltd., of Airglow Works, Berrylands Road, Surbiton, Surrey. Connection to an existing pipe system is simple, it is claimed. Two models are available, with outputs of 25,000 and 35,000 B.Th.U's per hour. *Scope*, March/59.

A group of French firms is now working on the use on a commercial scale of nuclear energy in food preservation. Foods being preserved include all sorts of vegetables.

Stephen Coulter in *Daily Telegraph*, March 22/59.

More than one mushroom grower has found out to his cost, over the last few years, that in his search for quicker and quicker production

he has lost that quality of produce which the housewife is demanding.
Commercial Grower, March 20/59.

The North range of Plastochrome gloves are resistant to oil and water and, by virtue of their crepe finish, give an excellent grip on wet surfaces. They are manufactured by Northide Ltd., Kirkham House, 54a Tottenham Court Road, London, W.1.
Industrial Equipment News, Mid-March/59.

Ethylene dibromide gave the most promising results in field the in the control of the potato rot nematode, *Ditylenchus destructor*.
H. M. Darling in *U.S. Plant Disease Reporter*, February 15/59.

The juice of garlic leaves and aqueous as well as certain organic solvent extracts of commercial garlic powder possess strongly bactericidal and fungicidal properties.
P. A. Ark and J. P. Thompson in *U.S. Plant Disease Reporter*, Feb. 15/59.

A warning device has been evolved for preventing the over-filling of oil fuel tanks when the fill point is some distance away. Price is £14 14s. 0d. from R. F. Landon & Partners Ltd., David Road, Poyle Trading Estate, Colnbrook, Bucks.
Industrial Equipment News, March/59.

" It was a misty old morning ", said Tom, " I was out early-on in the Lower Field searching for mushrooms. You find 'em best where the sheep do lie, you know ".
Sean Fielding in *Sunday Times*, March 8/59.

I know a grower who built a mushroom house with nine-inch concrete blocks placed on the flat. He could just as easily have had an eleven-inch cavity wall without the use of any more blocks. And that still air space between the two narrower plastered walls is one of the best and cheapest insulators that can be obtained.
Robert Patterson in *Commercial Grower*, March 6/59.

The NFU has formed a company to publicise horticulture. It is called Horticultural Publicity Ltd. A Union official said: " The company has been formed to provide the necessary machinery should the time become opportune to launch a national scheme ".
Grower, March 7/59.

If you like mushrooms there is, at the Ideal Home Exhibition, a Lucky Mushroom Tray for growing mushrooms in your own kitchen.
Bury Free Press, March 6/59.

British Mushroom Industry Ltd. celebrates its Silver Jubilee this year . . . Mushrooms are the one home-grown product which can count on an expanding market. *Daily Mail*, March 7/59.

Economical to run and maintain, the Wrigley driver-controlled electric tug has a hauling capacity of 4 tons and is designed to use with four-wheel industrial trailers. *Business*, March/59.

Mushrooms are one of those little gestures that housewives like to make to their husbands for Sunday breakfasts as a tribute to their hard work during the week. Considering everything, prices remain fairly static throughout the year, but I do feel it is an insult to any

NOW ABUNDANCE No. 3

A new name for 99·9 COMPOST MAKER but the same high quality, Grower Tested product.

OR ABUNDANCE SPECIAL MIX

Based on 99·9 SOLUBLE BLOOD POWDER. Deals effectively with tough Capelle Straw.

FOR BETTER COMPOSTING

And or your peace of mind you should take advantage of our 30 years experience in formulating these organic supplements. 28 lbs. to 40 lbs. per ton, depending on quality of manure applied immediately after watering.

Run a Trial Ton NOW

For Prompt Delivery

BRADFORD FERTILIZER CO. LTD.

MANUFACTURERS OF ORGANIC MANURES

GIRLINGTON - BRADFORD

Tel. BRADFORD 41288

shopper's intelligence to see a hastily scrawled sign saying that they are morning picked or, in one classic instance, " gathered by moonlight ".
Fruit Trades' Journal, March 14/59.

A highly efficient fungicidal paint named the Mercian Mould-resistant and Moisture-absorbent Wall Paint is a waterbound chemical preparation which quickly provides a hard but porous coating that stays clean, dry and free from moulds for long periods. It is able to absorb appreciable quantities of atmospheric moisture, thereby preventing excessive condensation. Available from Farrow & Jackson Ltd., 41-42 Prescot Street, London, E.1.
Industrial Equipment News, Mid-March/59.

At the laboratories of the Printing, Packaging and Allied Trades' Research Association, supported by the Department of Scientific and Industrial Research, work is being carried out on protecting foodstuffs against the hazards of transport and climate, with a view to reducing packaging costs and ensuring that goods reach the consumer in prime condition. *Commercial Grower*, March 27/59.

BELGIAN DISASTER FUND

More than £430 was contributed by MGA members in all parts of the world to the Belgian Disaster Fund, which was launched to support a fund in Belgium which was opened there to aid dependents of those who lost their lives in a mushroom mine disaster.

It was just before Christmas 1958 that some of the mine workings collapsed and eighteen people lost their lives.

Support for the MGA fund has been widespread, with contributions coming from America, Europe, South Africa, Australia and New Zealand as well as the United Kingdom.

Pictured here is Governor Roppe of the Province of Limburg, receiving the first MGA contribution—a cheque for £400. Making the gift is Monsieur Guy de Man, Chairman of the Union Professionelle des Champignonnistes de Belgique, member of the MGA and a well-known figure in U.K. mushroom circles.

The Governor expressed the warmest appreciation of what he termed " a wonderful and most generous gesture of neighbourliness among mushroom growers " and asked Monsieur de Man to convey heartfelt thanks to the MGA in England.

Photos by G. de Man

THE LIMBURG TRAGEDY

A religious service was celebrated on Easter Monday, at the scene of the Limburg cave disaster, by the Archbishop of Liege, Monseigneur Kesters. Among the many people present were M. Den, of the Ministry of Works in Belgium, and M. Roppe, Governer of the Limburg Province.

The vast mound of earth surmounted by a cross was excavated during the continuous efforts made to rescue those who had been trapped in the caves. The service was in the nature of a funeral for the 18 bodies which were never recovered, including those of the well-known mushroom growers, M. Pierre Heynen and M. Gerard Kinet.

Some idea of the massive effort made can be gained by the scale of people seen emerging from the excavated entrance to one of the collapsed " galleries ".

IVTH INTERNATIONAL CONGRESS COPENHAGEN

Anyone wishing to attend the International Congress on Mushroom Science in Copenhagen in July must register before 20th May. Later application will necessitate an additional payment of £5 14s. 0d. per delegate, because certain specially-reduced rates for advance bookings require firm acceptance by that date. About 60 papers have been promised, and attendance is expected to be 300. Fuller details will appear in our June issue.

GROWING IN THE SOVIET UNION
HISTORY—BOOKS—CURRENT INFORMATION

by

T. Bukowski (Poland)

History

The cultivation of mushrooms in Russia probably began at the end of the 18th century. There are articles by Bolotov in the periodical " Ekonomitsheski Magazin " published at that time. Mushrooms were grown on a larger scale in Petersburg at the end of the 19th century. In 1913 there were more than 500 mushroom huts around Moscow and Petersburg but after the October Revolution mushroom growing in the Soviet Union declined. It was in 1930 at the state farm of " Marfino " on the outskirts of Moscow 70, that huts were specially built for mushroom cultivation.

Pure culture mushroom spawn on a sterile medium was first introduced by Dr. E. C. Kliushnikova in 1932 at the Moscow State University. A special laboratory producing spawn after the Kliushnikovas method was organized by N. G. Gromov in the state farm " Smitshka " in 1937 and it existed for two years. During the Second World War production of mushrooms and spawn stopped. In 1955 a small mushroom spawn laboratory, managed by Mr. N. G. Gromov, was opened in one of the pavilions on the terrain of the Agricultural Permanent Exhibition in Moscow. A new period of mushroom growing in the Soviet Union began and horticulturists were engaged in mushroom growing in hotbeds, in glasshouses between other crops, cellars, disused pig sties and in mushroom huts sunken halfway into the earth.

Books

Between 1955 and 1957 three mushroom books were published. The Academy of Sciences of the USSR in 1955 issued a booklet " Kultoorah Champignionov " by T. L. Nikolaieva. It took into account not only all the Russian experience in mushroom growing, but also English, French and American mushroom literature which is often cited. Thus the Russian grower was acquainted with the modern ways of mushroom growing and the development of the mushroom growing industry in other countries. The booklet is excellent and has a great professional value.

Cultivating mushrooms in a glasshouse in Russia.

" Virastshivanie Champignionov " by M. A. Panov, published in 1956 is quite different. The author

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deals with species of the genus Agaricus growing in the Soviet Union and gives their botanical description. The author discusses questions of nutrition, physiology and genetics, showing erudition. A great part of the book deals with mushroom and spawn production in the Hungarian Mushroom Growing National Enterprise, where the author spent some weeks.

Current Information

The latest information was published in 1957, in the book " Champignioni " by N. G. Gromov. The author began as a research worker in 1934 and his book, besides containing many practical hints, has a good scientific background. The book is written clearly and is easily understood, not only by advanced growers but also by beginners.

English growers might be interested with the results of experiments conducted by Mr. Gromov which I cite from his book (page 83).

YIELDS OF MUSHROOMS IN RELATION TO THE COMPOSITION OF THE BED SUBSTRATUM

Bed substratum	Kilos per sq. meter	Moisture content before spawning.%
Cattle manure with 50% of straw bedding	6.70	53
Cattle manure with 50% of sawdust and shavings used as bedding	11.41	58
Horse manure with 70% of sawdust and shavings used as bedding	8.80	54
Potato haulms 75%; horse manure 25%; ammonium sulphate 1 kg.; superphosphate 0.5 kg. per cu. meter..	7.54	52
Beds of urban refuse 6 in. deep covered with a 2 inch layer of horse manure	4.79	50

Mr. Gromov, who conducts research work in the state farm " Teplitshni " near Moscow, informed me that from an area of about 1,000 sq. meters of mushroom beds prepared from cattle manure, a yield of 10.5 kilos per sq. meter was obtained. I hope that full details of this experiment will be given at the 4th International Mushroom Congress at Copenhagen next July.

The total area of mushroom beds in the Soviet Union is estimated to 50,000 sq. meters and the total yield does not exceed 200 tons of mushrooms yearly. This small mushroom production is due in part to the competition of cheap edible fungi which grow abundantly in the immense forests of the Soviet Union, cultivation of which incurs no cost. The yield of edible fungi is estimated at thousands of tons yearly. They are partly consumed in a fresh state and partly dried and preserved for the winter months.

In the state farm " Zaretshie ", near Moscow, a large mechanised modern mushroom farm and a mushroom spawn laboratory on the Hungarian pattern is being built. Dr. A. M. Panov of the Agriculture Timiriazev College, Horticultural Faculty, is in charge. Next year, when the laboratory will be completely finished, it will be able to produce 50,000 kg. of spawn.

Great News for Mushroom Growers!

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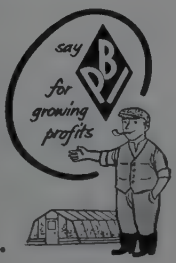

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389	Postages, Printing and Stationery		404 9 1
56	Telephone and Telegrams		44 1 0
72	Travelling, Hotel and Entertainment Expenses		71 0 5
51	Cost of Annual General Meeting and Luncheon, *less* Sales of Tickets		58 5 3
138	Cost of Executive Committee and Special Meetings		249 6 2
	Cost of Bournemouth Exhibition	880 10 10	
—	*Less:* Rent of Space and Sundry Receipts	775 9 2	
			105 1 8
239	Southport Conference		— — —
—	Reciprocal Visit—Dr. Kneebone and F. C. Atkins		162 10 0
	Cost of Bulletins (including " Digest ") and Literature	2,112 2 8	
	Add: Stock of Saleable Literature 1st November, 1957	100 0 0	
		2,212 2 8	
	Less: Sale of Advertising space in Bulletin, Sale of Bulletins and Literature £ 1,957 11 10		
71	Stock of Saleable Literature 31st October, 1958 190 0 0		
		2,147 11 10	
			64 10 10
150	Contribution to National Farmers' Union		150 0 0
18	Subscriptions to Trade Journals, etc.		13 6 0
58	Audit and Accountancy		57 15 0
15	Depreciation of Office Equipment		15 0 0
4	Library Books written off		— — —
2	Cheque Books, etc.		1 0 8
47	General Expenses		84 11 11
			3,458 15 2
	Balance, being Excess of Income over Expenditure for the year, transferred to Accumulated Fund		32 11 6
£3,168			£3,491 6 8

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ACCOUNTS

THE YEAR ENDED 31st OCTOBER, 1958

1957 £		£ s. d.	£ s. d.
1,728	Subscriptions from Ordinary Members	2,037 12 10	
481	Subscriptions from Associate Members	677 13 8	
			2,715 6 6
126	Receipts from Rent of Space at Eastbourne Exhibition, Sale of Tickets for Dinner and Dance, and Sundry Receipts, *less* Expenses		– – –
6	Sundry Receipts		26 0 2
750	Proportion of Administration Expenses charged to Publicity Fund		750 0 0
3,091			
77	*Balance* being Excess of Expenditure over Income for the year, transferred to Accumulated Fund		– – –
£3,168			£3,491 6 8

NOTE: The Publicity Fund Account and the complete Balance Sheet will be published in the next issue.

ALICE TARE—SAMPSON ODE

Much Dutch Mush
Floats here . . . . . in boats:
In tons, like onions,
Upsets . . . . . our markets.
Some Canners find spanners
And odd corks in the works:
Accused, they feel abused:
As salve, rumours they have
Refuted when so reputed.
Some say, by the way,
That Fairies, with fair eyes,
So hold a Wand o'er Nedderland
That 'Rooms, under Witches Brooms,
Pop right up over-night,
That sewers rift and pavements lift
Lush with the crush of Mush'
For such is the climate of the Dutch.
Alas! Such Trash!
Such " Double—Dutch ".
And now a Memorial to April's Editoral,
Chins up! Thumbs up! Else the game's up.

F.P.

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Dan Wuille & Co. Ltd., Covent Garden Market, W.C.2	100	0	0
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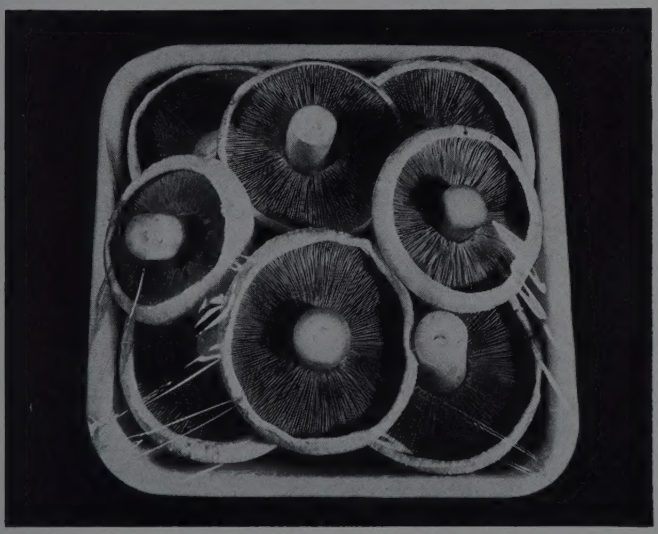

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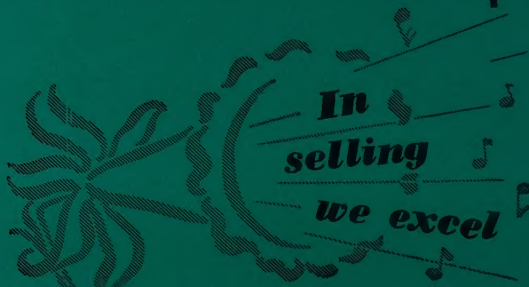

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